



Donald L. Stephens, Jr.
Application No. 09/866,570 Filed: May 25, 2001
Our Ref. No. 4630-59094
Art Unit: 1652
For: TRANSACYLASES OF THE PACLITAXEL
BIOSYNTHETIC PATHWAY
Inventor(s): Croteau et al.

FROM PEPTIDE FRAGMENT SEQUENCE 2									
NH2-	I	L	V	Y	Y	P	P	-COOH	
5'	ATI	CTI	GTI	TAT	TAT	CCI	CC	3'	(Residues 1-7 of SEQ ID NO: 30)
		T	C	C	C	C			AT-FOR1 (SEQ ID NO: 34)
			A			A			
NH2-	Y	Y	P	P	F	A	G	-COOH	
5'	TAT	TAT	CCI	CCI	TTT	GCI	GG	3'	(Residues 4-10 of SEQ ID NO: 30)
	C	C	C	C	C	C			AT-FOR2 (SEQ ID NO: 35)
			A	A		A			
FROM SEQUENCE HOMOLOGY CONSIDERATIONS									
NH2-	F	Y	P	F	A	G	R	-COOH	
5'	TTC	TAT	CCI	TTC	GCI	GGI	AG	3'	(SEQ ID NO: 39)
	T	C		T	C	C			AT-FOR3 (SEQ ID NO: 36)
					A	A			
NH2-	Y	Y	P	L	A	G	R	-COOH	
5'	TAC	TAT	CCI	TTI	GCI	GGI	AG	3'	(SEQ ID NO: 40)
	T	C		C	C	C	C		AT-FOR4 (SEQ ID NO: 37)
					A	A			
NH2-	D	F	G	W	G	K	P	-COOH	
3'	CTA	AAA	CCI	ACC	CCI	TTT	GG	5'	(SEQ ID NO: 41)
	G	G	C		C	C			AT-REV1 (SEQ ID NO: 38)
			A		A				

FIG. 4

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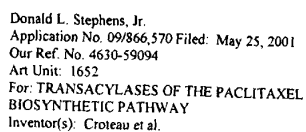


FIG. 6A

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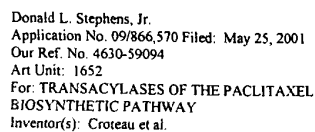


FIG. 6B

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TAX1 (SEQ ID NO: 28)	MEKTDLHVNLIEKVMVGESP	L	23
TAX2 (SEQ ID NO: 26)	MGRFNVDMIERVIVAP	CLQS	21
0			0
aab61522 (SEQ ID NO: 59)	MEKNVEILSRREIVK	SSP	22
aab61523 (SEQ ID NO: 62)	MPSLEKSVTIISRN	RVF	25
aab95283 (SEQ ID NO: 63)	MPSLEKSVTIISRN	RVF	25
aab97723 (SEQ ID NO: 64)	MASCIQELHFTHLH	IPY	37
aac17079 (SEQ ID NO: 65)	NNPHHTTFFILSEN	NNQMGEAAEQARG	147
aac18062 (SEQ ID NO: 66)	NNPHHTTFFILSEN	NNQMGEAAEQARG	147
aac27152 (SEQ ID NO: 67)	MGSSYQESPP	LLLEDLKYTIKES	20
aac99311 (SEQ ID NO: 68)	MESGKISVETET	LSKTLIKPSS	34
aad12025 (SEQ ID NO: 69)	MAPITERKSY	TTIV	27
caa20531 (SEQ ID NO: 70)	MANQRKPILP	LLLEKKPVEL	20
caa64636 (SEQ ID NO: 71)	MDSKQSSSEL	VFTVRRQKPE	29
caa94432 (SEQ ID NO: 72)	DFSFHVRKCQ	PEL	28
cab06427 (SEQ ID NO: 73)	MSIQIKQST	VMVR	21
cab10318 (SEQ ID NO: 74)	METMTMKVE	TISKE	19
cab10319 (SEQ ID NO: 60)	MEAKLEV	VTGKEVIK	25
			22
cab40761 (SEQ ID NO: 61)	MPMLMATRID	IIQKLN	23

FIG. 6C

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TAX1 (SEQ ID NO: 28)	K T T L Q L S S I D N L P G V R G S I F N A L L I Y N A S P S P T M I S A D P	A K P I	66
TAX2 (SEQ ID NO: 26)	K N I H L S P I D N K T . . . R G L T N I L S V Y N A S Q R V S . V S A D P	A K T I	60
aab61522 (SEQ ID NO: 59)	0
aab61523 (SEQ ID NO: 62)	K R I N L S L L I L S S P M Y T G A L L F Y A A D P Q N L L G F S T E E T	S L K L	65
aab95283 (SEQ ID NO: 63)	D L K L S V S D L P M L S C H Y I Q K G C L F T C P N L P L P A L	I S H L	62
aab97723 (SEQ ID NO: 64)	H H S L Y L S N L D I I G A R V F T P S V Y F Y P S T N N R E S F V	L K R L	76
aac17079 (SEQ ID NO: 65)	W . . L P L S N L D L L L P P L N V H V C F C Y K K P L H F T N T V A	Y E T L	184
aac18062 (SEQ ID NO: 66)	L Q K L N L S L L D Q I Q I P F Y V G L I F H Y E T L S D N S D I T	L S K L	58
aac27152 (SEQ ID NO: 67)	R K S M F L S N V D Q I L N . . . F D V Q T V H F F R P N K E F P P E M V	S E K L	72
aac99311 (SEQ ID NO: 68)	L S R Y N L S Y N D Q N I Y Q T C V S V G F F Y E N P D G I E I S T I R E	Q L	66
aad12025 (SEQ ID NO: 69)	G R F P L A E W D Q V . . G T I T H I P T L Y F Y D K P S E S F Q G N V	V E I L	58
caa20531 (SEQ ID NO: 70)	E T L S L S T L D N D P F N E V M Y A T I Y V F K A N G K N L D D P	V S L L	67
caa64636 (SEQ ID NO: 71)	R E T K F L S D I D D Q E G L R . . . F Q I P V I Q F Y H K D S S M G R K D P	V K V I	68
caa94432 (SEQ ID NO: 72)	Y E F K Q L S D V D D Q Q S L R . . . L Q L P F V N I Y P H N P S L E G R D P	V K V I	61
cab06427 (SEQ ID NO: 73)	K S L W L S N I D M I L R T P Y S H T G A V L I Y K Q P D N N . E D N I H P S S M Y F D A N I L		67
cab10318 (SEQ ID NO: 74)	L Q T L Q L S I Y D H I L P P V Y T V A F L F Y T K N D L I S Q E H T	S H K L	64
cab10319 (SEQ ID NO: 60)	R . . L Q L S I L L Y C P G I Y V S T I F F Y D L I T E S S E V F	S E N L	58
cab40761 (SEQ ID NO: 61)	H D K K K L I T L S N L D R Q C P L L M Y S V F F Y K N T T T R D F D S V	F S N L	64

FIG. 6D

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TAX1 (SEQ ID NO: 28) REALAKILVYYPPEAGRL. RETENGDLVECTG. GAMFLMAMADNEZSV 114
TAX2 (SEQ ID NO: 26) REALSKVLYVYYPPEAGRL. RNTENGDLVECTGE. GAVFVMMADNDZSV 108
aab61522 (SEQ ID NO: 59) MSQ 3
aab61523 (SEQ ID NO: 62) KKSLSKTLPIFYPLAGRII. GS. FVECNDEGAVFIEARVDH. LZSE 108
aab95283 (SEQ ID NO: 63) KHSLSITLTHFPPLAGRLS. TSSSGHVFLTCNDAGADFVFAQAKSIHVSD 111
aab97723 (SEQ ID NO: 64) QDALESSEVLVPYPLLSGRL. BEVENGKLEVFGEQGVLMVSA NSMDLAD 125
aac17079 (SEQ ID NO: 65) KTALESSEVLVPYPLLSGRL. BEVENGKLEVFGEQGVLMVSA NSMDLAD 125
aac18062 (SEQ ID NO: 66) ESSLSSEETLTLYYHVAGRLYN. GT. DCVIECNDDQIGYVETAFD. VELHQ 103
aac27152 (SEQ ID NO: 67) RKALVKLMDAYEELLAGRLRVDPSSGRILDVDCNGA. GAGFVTASDYTEE 121
aac99311 (SEQ ID NO: 68) QNSLSKTLVSVYYPPEAGKVV. KN. DY. IHCNDDGIEFVEVRI. RCRMND 110
aad12025 (SEQ ID NO: 69) KTSLSRVLVHFFYPLMAGRLRWLP. RGRFELNCNAE. GVEFIEEASEGKLS 106
caa20531 (SEQ ID NO: 70) RKALSEELLVHLYYPLLSGRLMBSSESNGLQLVYLG. GVPFVEVASTLDDSS 116
caa64636 (SEQ ID NO: 71) KKAIAETLVVYYPPEAGRL. BEGNGRKLMDCTGE. GIMFVEMDADVTEQ 116
caa94432 (SEQ ID NO: 72) KEAIGKALVYYPPEAGRL. BEGPGRKLFEVECTGE. GILFIEADADVSLEE 109
cab06427 (SEQ ID NO: 73) IEALSSEETLTLYYHVAGRLK. IN. GDRYEIDCNNAE. GALLFVEMDADVTEQ 114
cab10318 (SEQ ID NO: 74) KTSLSSEETLTLYYHVAGRLIT. GV. TVDCTDDEGAIFVDARVNNCPTE 108
cab10319 (SEQ ID NO: 60) KLSLSSEETLSRVYYPPEAGRIE. GL. SISCNDDGAVFTEARTDL. LLPD 101
cab40761 (SEQ ID NO: 61) KLGLEETMSVWYYPPEAGRLGLDGGGCKLINIRCNDDGGAVMVEAVATGVKLE 114

FIG. 6E

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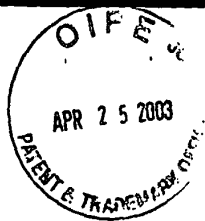
TAX1 (SEQ ID NO: 28) LGD..FDDSNPSEFQ.QLIFSLPLDITNF.....KDLSSLVVQVYTRRTTGG..GG 156
TAX2 (SEQ ID NO: 26) LQB..FNEYDPSFQ.QLVFNLRDVTNI.....EDLHLLTVQVYTRRTTGG..GG 150
aab61522 (SEQ ID NO: 59) ILEN.PNPN.ELNKLHPFFHEVSDVP.....LTVQLTFFEEGG..GL 41
aab61523 (SEQ ID NO: 62) FLKC.PVPE.SLELLIP...VEAKSRE...AVTWELLIQANFFSSGG..GL 149
aab95283 (SEQ ID NO: 63) VIAGIDVPD.VVKEFFETYDR..AVSYE...GHNREILAVQVTELN...DGY 153
aab97723 (SEQ ID NO: 64) LGDLTV?NPFAWLPLIFRNPGEAYKI.....LEMELLIQAQVYTRRTTGG..GG 169
aac17079 (SEQ ID NO: 65) ENLY.DPDE.SIAKLVPIKKHG.....VIAIQVYTRQLKGG..SI 266
aac18062 (SEQ ID NO: 66) FLGG.EESN.NLDLLVGL...SGELSE...TETPEELAAIQLNMETKGG..GL 144
aac27152 (SEQ ID NO: 67) LGD.LVYPNPAFAQLVTSQLQ.SLPKD.....DQELFFVFFQITSEKKG..GG 163
aac99311 (SEQ ID NO: 68) ILKY.ELRS.YARDLVLPKRVTVGSED...TTA...IVQLSHETDGG..GL 150
aad12025 (SEQ ID NO: 69) FKD.FS.PTPEFENLM.PQVNYKNPIE.....TIELFLAQVYTKKKG..GI 147
caa20531 (SEQ ID NO: 70) LN.....YIENLDDQVALRLVPEIEIDYESNVCYHPPALQVYTKKKG..GG 160
caa64636 (SEQ ID NO: 71) FGDELQPPFPFPCLE.ELLYDVPPDSAGV.....LNCPEELLIQVYTRRLRGG..GG 159
caa94432 (SEQ ID NO: 72) FWDTLPYSLSSMQNNIIHNALNSDEV.....LNSPEELLIQVYTRRLKGG..GG 153
cab06427 (SEQ ID NO: 73) FGD.FR.PNDELHRVMVPTCDYSKGIS.....SFEELLMVQLTRTRRGG..GV 156
cab10318 (SEQ ID NO: 74) FLKC.PDFD.ALQQLPLDVPDNPYVA...AATWELLLVKKATYFGGG..GM 152
cab10319 (SEQ ID NO: 60) FLRN.LNTD.SLSGFLPTLAAGE...S...PAAWELLLSVKVTFFEGGGSV 143
cab40761 (SEQ ID NO: 61) LGDLTQYNEFFYENLVYKPSIDGDFSV.....MELVVVAQVYTRRTTGG..GY 156

FIG. 6F

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TAX1 (SEQ ID NO: 28) VVGVSFHGVGVCDEGRGAQAQLKGLAEMAB . GEVKLS LEI IW 195
TAX2 (SEQ ID NO: 26) VVGVTRFHSVSVDGKIGQLLKGMGEMAB . GEFKPS LEI IW 189
aab61522 (SEQ ID NO: 59) ALGIGLSHKLCDALSGLIHVNSHAAFAAGGQDE IITSEF 80
aab61523 (SEQ ID NO: 62) VITICVSHKKTIDATSLAMEIRGHAESSB GITLSEF 187
aab95283 (SEQ ID NO: 63) FIGCSVNHAVTDGTSLSLWNTINTFAEVSAGAKNVT RQPDFTRESVL 198
aab97723 (SEQ ID NO: 64) SLGIRLCHCICDGFEGAMQELGSSHAAATAGTKKLIAD PEV VW 209
aac17079 (SEQ ID NO: 65) VVGVCTFDHRRVADAYSMNMFTLSHAEISSDVPI SCV PSEF 305
aac18062 (SEQ ID NO: 66) VIGAQFNHIIIGDMFTMSTHMMNSHAKACBVGKE VAHETF 183
aac27152 (SEQ ID NO: 67) AMGISTNTTTFDGLSFKTLENLH EKPLS TPCCN 201
aac99311 (SEQ ID NO: 68) AVAFGISHKVADGCTIASMKDHAASACYLSS HHVPTLL 191
aad12025 (SEQ ID NO: 69) SLSVNVSAIVDGSALHLISEHGRLLA GEPLA TVPFL 185
caa20531 (SEQ ID NO: 70) TIGTALTAAVCDGYGVAQIIHALTELA . AGKTEPS VKSVW 199
caa64636 (SEQ ID NO: 71) IFALRLNHMTMSDAPGLVQHTAVGEMAB . GGSAPS ILV VW 198
caa94432 (SEQ ID NO: 72) IFGLCFNHMTMADGFGIVQHTMKATAEIAB . GAFAPS ILV VW 192
cab06427 (SEQ ID NO: 73) SIGFAQHSHVCDGMAHFFENNSHARIK . GLLPA LEV VH 194
cab10318 (SEQ ID NO: 74) AIGICITHKIAADAASISTEIRSHHAAATAGGENDA AAMESVEF 193
cab10319 (SEQ ID NO: 60) AVSVSVSHKICDIAASLVTHVKKDHTTTAKGKSN STIE F 181
cab40761 (SEQ ID NO: 61) SIGIGTSLSLFDGISAIEIHAHNSHINHKNKSN SKITNKKEDVVIKVH 201

FIG. 6G

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TAX1 (SEQ ID NO: 28) NRELVKLD...DP...KYLQFFHF...EFLRAP...SIV...EKIVQ 227
TAX2 (SEQ ID NO: 26) NREMVKPE...DI...MYLQFDF...DFIHPP...LNL...EKSIQ 221
aab61522 (SEQ ID NO: 59) DLAKMFFPCDIEN...LNMATGITKE...NIVT...107
aab61523 (SEQ ID NO: 62) TASEVFPKPLDEL...PSKPMDRKKEEVEEMS.CVT...218
aab95283 (SEQ ID NO: 63) ISPAVLKVPQGGPKVTFDENAPLRERIFSFSRESIQELKAVVKK...243
aab97723 (SEQ ID NO: 64) DRETFKPR...NP...PMVKYPPH...EYLPIEERSNLNLSLD...TKPLQ 249
aac17079 (SEQ ID NO: 65) RSSLLNPRRPLVMDPSIDQIYMPVTSLPPPPQETTNPENLLAS...347
aac18062 (SEQ ID NO: 66) GLAPLMPSAKVIN...IPPPPSFEG...VKFVS...210
aac27152 (SEQ ID NO: 67) DRTLLKARDPPS...VAFPHH...EL...VKFQDCETTTFEATSEHLDF 242
aac99311 (SEQ ID NO: 68) VSDSIFPRQDNI...CEQFPTSK...NCVE...216
aad12025 (SEQ ID NO: 69) DKILWAGEPLPPFVSPPKFDHK...EFDQPPFLIGETDNVEERKKKTIV. 232
caa20531 (SEQ ID NO: 70) QERLVGKIDNKP...GKVPGSHI...D...GFLATSAYLPT...TDVVT 237
caa64636 (SEQ ID NO: 71) CRELLNAR...NP...PQVTCETH...EYDEVVDMKSGLIPL...DDMVH 236
caa94432 (SEQ ID NO: 72) QALLTAR...DP...PRITFRHY...EYDQVDMKSGLIPL...NSKID 230
cab06427 (SEQ ID NO: 73) DRYLHLRPRNPPQI...KYSHS...QFE...PFVPSLPNELLDGKTNSQ. 235
cab10318 (SEQ ID NO: 74) AGANFYPPANEAF...KLPADQAGKRS.SIT...221
cab10319 (SEQ ID NO: 60) AETTIYPPPPSHM...YEQFPSTDSNITSKYVL...213
cab40761 (SEQ ID NO: 61) DERNLLVNRDAVRETNAACILYQLIKQAMMTYQEQNRNLELPDSGEVI 256

FIG. 6H

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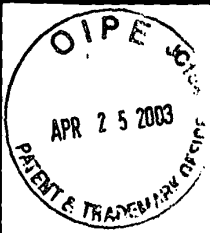


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TAX1 (SEQ ID NO: 28)	TYIIIDFETINYYIKQSV.MEEC	KEF	251
TAX2 (SEQ ID NO: 26)	ASMVISFERINYYIKRCM.MEEC	KEF	245
aab61522 (SEQ ID NO: 59)	RRFVFLRSSVESLRERESGNK	KIR.AT	133
aab61523 (SEQ ID NO: 62)	KRFVFDASKIKKKLRK.ASRN	LVKNPT	244
aab95283 (SEQ ID NO: 63)	KWITVDNCEIDCGVELLGKQSN	DAVSKPV	293
aab97723 (SEQ ID NO: 64)	KYRISKEFQCRVKSI.A.QGED	PTL	273
aac17079 (SEQ ID NO: 65)	RIYYIKANALQELQTLASSKN	GKRT	373
aac18062 (SEQ ID NO: 66)	KRFVFNENAIITRKRKEATEED	DQKKRPS	244
aac27152 (SEQ ID NO: 67)	KIKLSSSEQIKKKERA..SET	SNG	265
aac99311 (SEQ ID NO: 68)	KTFIFPPEAIEKKSKAVEFG	IEKPT	242
aad12025 (SEQ ID NO: 69)	VMLPLSTSQLQKLRSKANGSKH	SDP	257
caa20531 (SEQ ID NO: 70)	ETINIRAGDIKKRKKDSM.MKEC	EYL	261
caa64636 (SEQ ID NO: 71)	KSEFFGFPSEVSALRRFV.PHHL	RK.	259
caa94432 (SEQ ID NO: 72)	QLHFFFSQLQISTLRQTL.PAHL	HD.	253
cab06427 (SEQ ID NO: 73)	TLHILSREQINTLKQKLDLSNN	TR	260
cab10318 (SEQ ID NO: 74)	KRVVFEASKVEDLRTKAASEE	TVDQPT	248
cab10319 (SEQ ID NO: 60)	KRVVFEPSKIAELKKHKAASES	VPVPT	239
cab40761 (SEQ ID NO: 61)	KTFELNGDAIESMKKKSLG		276

FIG. 61

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TAX1 (SEQ ID NO: 28) .CS..SFEVASAMT~~W~~IARTTRAFQIPESY.....VKILFGMDM~~B~~NSFN 291
TAX2 (SEQ ID NO: 26) .FS..AFEVVV~~A~~L~~I~~LARTKSEFRI~~P~~PPNEY.....VKIIFP~~I~~DM~~B~~NSFD 285
aab61522 (SEQ ID NO: 59) RVE....VLSVFI~~W~~SRF..MASTNHDDKTGKIYT...LIHP~~V~~NL~~B~~RQAD 173
aab61523 (SEQ ID NO: 62) RVE....AVT~~A~~L~~F~~~~W~~SCV..TKVSRLSSLTPRTSV...LQIL~~V~~NL~~B~~GKVD 284
aab95283 (SEQ ID NO: 63) AVEISSFQSLC~~A~~LL~~W~~~~B~~AI~~T~~RAARKLPSSKTTT.....FRMA~~V~~NC~~B~~H~~B~~LS 336
aab97723 (SEQ ID NO: 64) VCS..TFDAMA~~A~~HI~~W~~~~B~~SWVKALDVKKPLDYN.....LRLTF~~S~~~~V~~NV~~B~~TSLE 315
aac17079 (SEQ ID NO: 65) KLE....SFS~~A~~FL~~W~~KLVAEHA~~A~~AKDPVP~~I~~KTSK.....LGIV~~V~~DG~~B~~RLM 413
aac18062 (SEQ ID NO: 66) RVD....LVT~~A~~FLSKSLIEMDCAKKEQTKSRPSL...MVHMMNL~~B~~K~~B~~TK 286
aac27152 (SEQ ID NO: 67) NVRVTGFNVV~~T~~~~A~~LV~~W~~~~B~~CKALSVAAEEGEET.NLERESTILYA~~V~~DI~~B~~GL 313
aac99311 (SEQ ID NO: 68) RVE....VLT~~A~~FLS~~B~~CATVAGKSA~~A~~KNNNCGQSLPFPVLQAI~~N~~L~~B~~PIL 287
aad12025 (SEQ ID NO: 69) AKGFTRYETVTG~~H~~V~~W~~~~B~~CACKARGHSP~~E~~QPT.AL.....GIC~~I~~DT~~B~~SSM 299
caa20531 (SEQ ID NO: 70) KESFTTYEVLSSYI~~W~~KKLRSRALKLNPDGIT.....V.LGV~~A~~YGI~~B~~HVLD 304
caa64636 (SEQ ID NO: 71) .CS..TFE~~L~~LT~~A~~V~~L~~~~W~~~~B~~CRMTSLKPDPEEE.....VRALCI~~V~~NA~~B~~SSFN 299
caa94432 (SEQ ID NO: 72) .CP..SFEVLT~~A~~YV~~W~~~~B~~LR~~T~~IALQFKPEEE.....VRFLCV~~M~~NL~~B~~SKID 293
cab06427 (SEQ ID NO: 73) ...LSTYE~~V~~V~~A~~HV~~W~~~~B~~SVSKARGLS~~D~~HEEI.KL.....IMP~~V~~DG~~B~~SSIN 300
cab10318 (SEQ ID NO: 74) RVE....SVT~~A~~LI~~W~~KCF..VASSK..TTTCDHKV...LVQLANL~~R~~SKIP 286
cab10319 (SEQ ID NO: 60) RVE.....AIMSLI~~W~~RC~~A~~..RNS~~S~~RSNLLI~~P~~RQAV...MWQAMDI~~R~~L~~R~~IP 279
cab40761 (SEQ ID NO: 61) .FMCSSFEFLA~~A~~H~~L~~~~W~~KARTRALGLRRDA.....MVCLQFAV~~D~~I~~R~~K~~R~~TE 318

FIG. 6J

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TAX1 (SEQ ID NO: 28) P.P.L.P.S.G.Y.Y.G.N.S.I.G.T.A.C.A.V.D.N.V.Q.D..L.L.S.G..S.L.L.R.A.I.M.I.I.K.K.S.S.V.S.L... 334
TAX2 (SEQ ID NO: 26) S.P.L.P.K.G.Y.Y.G.N.A.I.G.N.A.C.A.M.D.N.V.K.D..L.L.N.G..S.L.L.Y.A.L.M.L.I.K.K.S.S.F.A.L... 328
aab61522 (SEQ ID NO: 59) P.D.I.E.D.N.M.F.T.G.N.I.M.R.F.S.V.T.V.P.M.M.I.I.N..E.N.D.E.E.K.A.S.L.V.D.Q.M.R.E.E.I.R.K.I... 217
aab61523 (SEQ ID NO: 62) S..L.C.E.N.T.I.G.N..M.L.S.L.M.I..L.K.N.E.E..A.A.I.E.R.I.Q.D.V.V.D.E.I.R.R.A.S.E.I.F... 324
aab95283 (SEQ ID NO: 63) P.K.L.N.P.E.Y.F.T.G.N.A.I.....Q.S.V.P.T.F.A.T.A.A.E.V.L.S.R.D.L.K.W.C... 368
aab97723 (SEQ ID NO: 64) T.L.K.L.R.K.G.F.Y.G.N.V.V.C.L.A.C.A.M.S.S.V.E.S..L.I.N.D..S.L.S.K.T.T.R.L.V.Q.D.A.R.L.R.V... 359
aac17079 (SEQ ID NO: 65) E.K.E.N.N.T.Y.F.T.G.N.V.L.S.V.P.F.G.G.Q.R.I.D.D.L.I.S.K.P.L.S.W.V.T.E.E.V.H.R.F.L.K.K... 455
aac18062 (SEQ ID NO: 66) L.A.L.E.N.D.V.S.G.N.F.F.....I.V.V.N.A..E.S.K.I.T.V.A.P.K.I.T.D.L.T.E.S.L.G.S.A... 323
aac27152 (SEQ ID NO: 67) N.P.E.L.P.P.S.Y.T.G.N.A.V.L.T.A.Y.A.K.E.K.C.K.A..L.L.E.E..P.F.G.R.I.V.E.M.V.G.E.G.S.K.R.I... 357
aac99311 (SEQ ID NO: 68) ..L.P.Q.N.S.V.G.N.L.V.S.I.Y.F.S.R.T.I.K.E.N.D.Y.L.N.E.K.E.Y.T.K.L.V.I.N.E.L.R.K.E.Q.K.I... 331
aad12025 (SEQ ID NO: 69) E.P.P.L.P.R.G.Y.F.T.G.N.A.T.L.D.V.V.A.A.S.T.S.G.E..L.I.S.N..E.L.G.F.A.A.S.L.I.S.K.A.I.K.N.V... 343
caa20531 (SEQ ID NO: 70) P.P.L.P.K.G.Y.Y.G.N.A.Y.I.D.V.V.E.L.T.V.R.E..L.E.E.S..S.I.S.N.I.A.N.R.V.K.K.A.K.K.T.A.Y.E.K 350
caa64636 (SEQ ID NO: 71) P.P.L.P.T.G.Y.Y.G.N.A.F.A.F.P.P.A.V.I.T.T.A.A.K..L.S.K.N..P.L.G.Y.A.L.E.L.V.K.K.T.S.D.V... 342
caa94432 (SEQ ID NO: 72) I..P.L..G.Y.Y.G.N.A.V.V.V.P.A.V.I.T.T.A.A.K..L.C.G.N..P.L.G.Y.A.V.D.L.I.R.A.S.A.K.A... 334
cab06427 (SEQ ID NO: 73) N.P.S.L.P.K.G.Y.C.G.N.V.V.F.L.A.V.C.T.A.T.V.G.D..L.S.C.N..P.L.T.D.T.A.G.K.V.Q.E.A.L.K.G.L... 344
cab10318 (SEQ ID NO: 74) S..L.L.Q.E.S.S.I.G.N.L.M.F.S.S.V..L.S.I.G.R..G.G.E.V.K.I.E.E.A.V.R.D.L.R.K.K.E.E.L... 328
cab10319 (SEQ ID NO: 60) S..S.V.A.P.K.D.V.I.G.N.L.Q.S.G.F.S..L.K.K.D.A..E.S.E.F.E.I.P.E.I.V.A.T.F.R.K.N.K.E.R.V... 321
cab40761 (SEQ ID NO: 61) T..P.L.P.E.G.F.T.S.G.N.A.Y.V.L.A.S.V.A.S.T.A.R.E..L.L.E.E.L.T.L.E.S.I.V.N.K.I.R.E.A.K.S.I... 362

FIG. 6K

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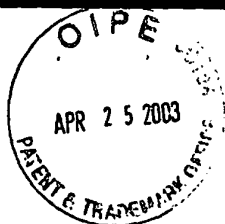


Donald L. Stephens, Jr.
Application No. 09/866,570 Filed: May 25, 2001
Our Ref. No. 4630-59094
Art Unit: 1652
For: TRANSACYLASES OF THE PACLITAXEL
BIOSYNTHETIC PATHWAY
Inventor(s): Croteau et al.

TAX1 (SEQ ID NO: 28) . . . NDNF . K S R A V V K P S E L D V N M N H E N V V A F A D W S R L 367
TAX2 (SEQ ID NO: 26) . . . N E N F . K S R I L T K P S T L D A N M K H E N V V G C G D W R N L 361
aab61522 (SEQ ID NO: 59) . . . D A V V K K L Q E D N R G H L E F L N K Q A S G F V N G E I V S F S F T S L C K F 259
aab61523 (SEQ ID NO: 62) . . . S . . . L N C K E M S K S S R I F E L L E E I G . K V Y G R G . . . N E M D L W M S N S W C K L 366
aab95283 (SEQ ID NO: 63) . . . A D Q L N Q S V A A H Q D G R I R S V A D W E A N P R C F P L G N A D G A S V T M G S S P R F 416
aab97723 (SEQ ID NO: 64) . . . S E D Y L R S M V D Y V D V K R P K R L E F G G K L T I T Q W T R F 393
aac17079 (SEQ ID NO: 65) S V T K E H F L N L I D W V E T C R P T P A V S R I Y S V G S D D G P A F V S S G R S F 500
aac18062 (SEQ ID NO: 66) . . . C G E I I S E V A K V D D A E V V S S M V L N S V R E F Y Y E W G K G E K N V F L Y T S W C R F 371
aac27152 (SEQ ID NO: 67) . . . T D E Y A R S A I D W G E L Y K G F P H G E V L V S S W W K L 388
aac99311 (SEQ ID NO: 68) . . . K N L S R E K L T Y V A Q M E E F V K S L K E F D I S N F L D I D A Y L S D S W C R F 374
aad12025 (SEQ ID NO: 69) . . . T N E Y V M I G I E Y L K N Q K D L K K F Q D L H A L G S T E G P F Y G N P N L G V V S W L T L 391
caa20531 (SEQ ID NO: 70) . . . G Y I E E L K N T E R L M R D D S M F E G V S D G L F F L T D W R N I 386
caa64636 (SEQ ID NO: 71) . . . T E E Y M K S V A D L M V L K G R P H F T V V R T F L V S D V T R G 376
caa94432 (SEQ ID NO: 72) . . . T M E Y I K S T V D L M V I K G R P Y F T V V G S F M M S D L T R I 368
cab06427 (SEQ ID NO: 73) . . . D D D Y L R S A I D H T E S K P G L P V P Y M G S P E K T I Y . . P N V L V N S W G R I 386
cab10318 (SEQ ID NO: 74) . . . G T V I L D E G G S S D S S M I G S K L A N L M L T N Y S R L S Y E T H E P Y T V S W C K L 376
cab10319 (SEQ ID NO: 60) . . . N E M I K E S L Q G N T I G Q S L L S L M A E T V S E S T E I D R Y I M S S W C R K 363
cab40761 (SEQ ID NO: 61) . . . D Q G Y I N S Y M E A L G G S N D G N L P P L K E L T L I S D W T K M 397

FIG. 6L

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Donald L. Stephens, Jr.
Application No. 09/866,570 Filed: May 25, 2001
Our Ref. No. 4630-59094
Art Unit: 1652
For: TRANSACYLASES OF THE PACLITAXEL
BIOSYNTHETIC PATHWAY
Inventor(s): Croteau et al.

TAX1 (SEQ ID NO: 28) G . F D E V **D E F G H G G** N A V S V S P V Q Q Q S . . A L A M Q N Y F L F L K P S K N K P D **G** I K I L M 414
TAX2 (SEQ ID NO: 26) G . F Y E A **D E F G H G G** N A V N V S P M Q Q Q R E H E L A M Q N Y F L F L R S A K N M I D **G** I K I L M 410
aab61522 (SEQ ID NO: 59) **E** V Y . E A **D E F G H G G** K E L W V A S A R M S . Y K N L . . V A F I D T K E G D **G** I E A W I 300
aab61523 (SEQ ID NO: 62) G L Y . D A **D E F G H G G** K E L W V T G R G T S H F K N L . . M L L I D T K D G E **G** I E A W I 408
aab95283 (SEQ ID NO: 63) **E** M Y . D N **D E F G H G G** R E Y A V R S G R S N K F D G K I S A . F P G R E G N G T V D L E V 459
aab97723 (SEQ ID NO: 64) E M Y E T A **D E F G H G G** K E L Y A G P I . . D L R P T P Q V C V L L P Q G G V E S G N D Q S M V V C L 441
aac17079 (SEQ ID NO: 65) **E** V N . Q V **D E F G H G G** S S E Y F G S Y H F P W G G S A G Y V M P M P S S V D D R D W M V Y L 544
aac18062 (SEQ ID NO: 66) **E** L Y . E V **D E F G H G G** I E S L V D T T A V P F . . G L I V L M D E A P A G D **G** I A V R A 412
aac27152 (SEQ ID NO: 67) G . F A E V E Y P P **G G H G G** K E K Y S C P V Y H R K D I V L L F P D I D G D S K **G** V Y V L A 431
aac99311 (SEQ ID NO: 68) **E** F Y . D V **D E F G H G G** K E I W V . C L F Q P Y I K N C V V M M D Y P F G D D Y **G** I E A I V 417
aad12025 (SEQ ID NO: 69) **E** . M Y G L **D E F G H G G** K E F Y T G P G T H D F D G D S L I L P D Q N E D G . S V I L A T 433
caa20531 (SEQ ID NO: 70) G W F G S M **D E F G H G G** N E **E** V N L R P L . T Q R E S T V H V G M I L K P S K S D P S M E G **G** V K V I M 435
caa64636 (SEQ ID NO: 71) G . F G E V **D E F G H G G** K A Y Y G G P A K G G V G A I P G V A S F Y I P F K . N K K G E N **G** I V V P I 424
caa94432 (SEQ ID NO: 72) G . V E N V **D E F G H G G** K A I F G G P T T T G A R I T R G L V S F C V P F M . N R N G E K **G** T A L S L 416
cab06427 (SEQ ID NO: 73) **E** . Y Q A M **D E F G H G G** S S E T F F G I S N I F Y D G Q C F L I P S R D G D G . S M T L A I 428
cab10318 (SEQ ID NO: 74) **E** L Y . E A S **E F G H G G** D S **E** V W V V G N V S P V L G N L . . A M L I D S K D G G Q **G** I E A F V 418
cab10319 (SEQ ID NO: 60) **E** F Y . E V **D E F G G G** S S **E** V W V V G Y A S H T I Y D N M V G V V L I D S K E G D **G** V E A W I 407
cab40761 (SEQ ID NO: 61) **E** . F H N V G **E F G G** G E P A D Y M A P L C P P V P Q V A Y F M K N P K D A K **G** V L V R I 441

FIG. 6M

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Donald L. Stephens, Jr.
Application No. 09/866,570 Filed: May 25, 2001
Our Ref. No. 4630-59094
Art Unit: 1652
For: TRANSACYLASES OF THE PACLITAXEL
BIOSYNTHETIC PATHWAY
Inventor(s): Croteau et al.

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TAX1 (SEQ ID NO: 28) F L L S K M K S E K I E M E A M M K . K Y V A K V
TAX2 (SEQ ID NO: 26) F M P A S M V K P P E K I E M E V T I N . K Y V A K I C N S K L
aab61522 (SEQ ID NO: 59) N L D Q N D M S R R E E A D E E L L R Y V S S N P S V M V S V S
aab61523 (SEQ ID NO: 62) T L T E E Q M S L E E C D Q E L L E S A S I N P P V L I
aab95283 (SEQ ID NO: 63) V L S P E T M A G I E S D G E F M R Y V T N K
aab97723 (SEQ ID NO: 64) C L P P T A V H T E T R L L S L N D H K
aac17079 (SEQ ID NO: 65) H L T K G Q L R F I E E E A S H V L K P I D N D Y L K I
aac18062 (SEQ ID NO: 66) C L S E H D M I Q E F Q Q H H Q L L S Y V S
aac27152 (SEQ ID NO: 67) A L P S K E M S K E Q H W F E D T L C
aac99311 (SEQ ID NO: 68) S F E Q E K M S A E E K N E Q L L Q F V S N
aad12025 (SEQ ID NO: 69) C L Q V A H M E A E K K H F Y E D I
caa20531 (SEQ ID NO: 70) K L P R D A M V E E K K R E M A T M K K L Y F G D T N
caa64636 (SEQ ID NO: 71) C L P G F A M E T E V K E L D G M L K V D A P L . . V N S N Y A I I R P A L .
caa94432 (SEQ ID NO: 72) C L P P P A M E R E R A N V H A S L Q V K Q V V D A V D S H M Q T I Q S A S K
cab06427 (SEQ ID NO: 73) N L F S S H L S R E K K Y F Y D E
cab10318 (SEQ ID NO: 74) T L P E E N M S S E E Q N P E L L A F A T M N P S V L V
cab10319 (SEQ ID NO: 60) S L P E E D M S V E V D D Q E L L A Y A V L N P P V V A
cab40761 (SEQ ID NO: 61) G L D P R D V N G E I S N H H F L D C

FIG. 6N

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